

CLAIMS

1. A method for allocating memory for use by time sensitive data communications processing, the method comprising the steps of:

- 5 establishing a base memory block;
- accepting a request for a memory buffer, wherein the request comprises a specification of a buffer size for the memory buffer;
- determining if the base memory block contains sufficient memory for the memory buffer; and
- 10 allocating, in response to a determination that there is insufficient memory within the base memory block, an additional memory block that is at least as large as the buffer size and wherein the additional memory block is not required to form a contiguous memory section with the base memory block.
- 15 2. The method according to claim 1, wherein the base memory block, the additional memory block and the memory buffer are located within pinned kernel memory.
3. The method according to claim 1, wherein the additional memory block is accessed through a linked list structure.
- 20 4. The method according to claim 1, wherein the additional memory block has a predetermined size.
5. The method according to claim 1, wherein the request for the memory buffer is received from a mass storage data server application processing module.

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6. The method according to claim 1, further comprising the steps of:

accepting a subsequent request for a second memory buffer, wherein the subsequent request comprises a second specification of a second buffer size for the second memory buffer;

5 determining if the base memory block and the additional memory block contain sufficient memory for the second memory buffer; and

allocating, in response to a determination that there is insufficient memory within the base memory block and the additional memory block, a second additional memory block that is at least as large as the second buffer size and wherein the
10 second additional memory block is not required to form a contiguous memory section with either the base memory block or the additional memory block.

100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500 3600 3700 3800 3900 4000 4100 4200 4300 4400 4500 4600 4700 4800 4900 5000 5100 5200 5300 5400 5500 5600 5700 5800 5900 6000 6100 6200 6300 6400 6500 6600 6700 6800 6900 7000 7100 7200 7300 7400 7500 7600 7700 7800 7900 8000 8100 8200 8300 8400 8500 8600 8700 8800 8900 9000 9100 9200 9300 9400 9500 9600 9700 9800 9900 10000 10100 10200 10300 10400 10500 10600 10700 10800 10900 11000 11100 11200 11300 11400 11500 11600 11700 11800 11900 12000 12100 12200 12300 12400 12500 12600 12700 12800 12900 13000 13100 13200 13300 13400 13500 13600 13700 13800 13900 14000 14100 14200 14300 14400 14500 14600 14700 14800 14900 15000 15100 15200 15300 15400 15500 15600 15700 15800 15900 16000 16100 16200 16300 16400 16500 16600 16700 16800 16900 17000 17100 17200 17300 17400 17500 17600 17700 17800 17900 18000 18100 18200 18300 18400 18500 18600 18700 18800 18900 19000 19100 19200 19300 19400 19500 19600 19700 19800 19900 20000 20100 20200 20300 20400 20500 20600 20700 20800 20900 21000 21100 21200 21300 21400 21500 21600 21700 21800 21900 22000 22100 22200 22300 22400 22500 22600 22700 22800 22900 23000 23100 23200 23300 23400 23500 23600 23700 23800 23900 24000 24100 24200 24300 24400 24500 24600 24700 24800 24900 25000 25100 25200 25300 25400 25500 25600 25700 25800 25900 26000 26100 26200 26300 26400 26500 26600 26700 26800 26900 27000 27100 27200 27300 27400 27500 27600 27700 27800 27900 28000 28100 28200 28300 28400 28500 28600 28700 28800 28900 29000 29100 29200 29300 29400 29500 29600 29700 29800 29900 29999 30000

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7. A method of releasing memory allocated to a memory pool, wherein pinned memory buffers are temporarily allocated and not relocated within the memory pool and wherein additional memory block are sequentially added to the memory pool, the method comprising the steps of:

- 5 periodically examining a set of last two memory blocks to determine if at least one memory buffer is allocated therein; and releasing a last added additional memory block if the step of periodically examining determines that there are no memory buffers allocated within the set of last two memory blocks.

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8. A system for allocating memory for use by time sensitive data communications processing, the system comprising:

a kernel memory; and

5 a kernel memory allocation module, communicatively coupled to the kernel memory, wherein the kernel memory allocation module:

establishes a base memory block within the kernel memory;

accepts a request for a memory buffer, wherein the request comprises a specification of a buffer size for the memory buffer;

10 determines if the base memory block contains sufficient memory for the memory buffer; and

allocating, in response to a determination that there is insufficient memory within the base memory block, an additional memory block within the kernel memory that is at least as large as the buffer size.

15 9. The system according to claim 8, wherein the base memory block, additional memory block and the memory buffer are located within pinned kernel memory.

10. The system according to claim 8, wherein the additional memory block does not form a contiguous memory block with the base memory block.

20 11. The system according to claim 8, wherein the additional memory block is accessed through a linked list structure.

12. The system according to claim 8, wherein the additional memory block has a predetermined size.

25 13. The system according to claim 8, wherein the request for the memory buffer is received from a mass storage data server application processing module.

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14. The system according to claim 8, wherein the pinned memory buffers are temporarily allocated and not relocated within the memory pool and wherein additional memory block are sequentially added to the memory pool, and wherein the kernel memory allocation module further:

5 periodically examines a set of last two memory blocks to determine if at least one memory buffer is allocated therein; and

releases a last added additional memory block if the step of periodically examining determines that there are no memory buffers allocated within the set of last two memory blocks.

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15. The system according to claim 8, wherein the kernel memory allocation module further:

15 accepts a subsequent request for a second memory buffer, wherein the subsequent request comprises a second specification of a second buffer size for the second pinned memory buffer;

20 determines if the base memory block and the additional memory block contain sufficient memory for the second memory buffer; and

allocates, in response to a determination that there is insufficient memory within the base memory block and the additional memory block, a second additional memory block that is at least as large as the second buffer size.

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16. A computer readable medium including computer instructions for allocating memory for use by time sensitive data communications processing, the computer instructions comprising instructions for:

establishing a base memory block;

5 accepting a request for a memory buffer, wherein the request comprises a specification of a buffer size for the memory buffer;

determining if the base memory block contains sufficient memory for the memory buffer; and

10 allocating, in response to a determination that there is insufficient memory within the base memory block, an additional memory block that is at least as large as the buffer size and wherein the additional memory block is not required to form a contiguous memory section with the base memory block.

15 17. The computer readable medium according to claim 16, wherein the base memory block, additional memory block and the memory buffer are located within pinned kernel memory.

20 18. The computer readable medium according to claim 16, wherein the additional memory block is accessed through a linked list structure.

25 19. The computer readable medium according to claim 16, wherein the additional memory block has a predetermined size.

20. The computer readable medium according to claim 16, wherein the request for the memory buffer is received from a mass storage data server application processing module.

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21. The computer readable medium according to claim 16, further including computer instructions for:

accepting a subsequent request for a second memory buffer, wherein the subsequent request comprises a second specification of a second buffer size for the second pinned memory buffer;

5 determining if the base memory block and the additional memory block contain sufficient memory for the second memory buffer; and

allocating, in response to a determination that there is insufficient memory within the base memory block and the additional memory block, a second additional 10 memory block that is at least as large as the second buffer size and wherein the second additional memory block is not required to form a contiguous memory section with either the base memory block or the additional memory block.

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22. A computer readable medium including computer instructions for releasing memory allocated to a memory pool, wherein pinned memory buffers are temporarily allocated and not relocated within the memory pool and wherein additional memory block are sequentially added to the memory pool, the computer instructions comprising instructions for:

5 periodically examining a set of last two memory blocks to determine if at least one memory buffer is allocated therein; and

10 releasing a last added additional memory block if the step of periodically examining determines that there are no memory buffers allocated within the set of last two memory blocks.

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